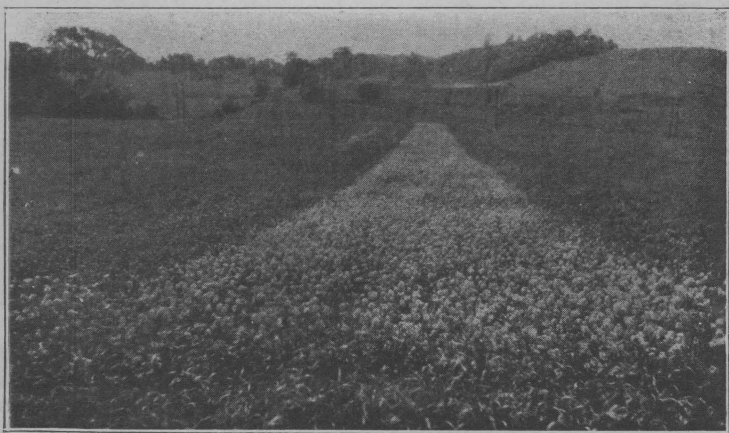


**ERADICATION**  
**of**  
**WILD MUSTARD**  
**WILD RADISH**  
(Kale or Jointed Charlock)  
**WILD TURNIP**

**By Spraying with**

**SULPHATE of IRON**



White portion of picture shows Wild Mustard. Dark portion shows part of field sprayed with Sulphate of Iron, absolutely destroying the mustard.

**American Steel & Wire Company**  
**30 Church Street, New York City**



**ERADICATION**  
**of**  
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**WILD RADISH**  
(Kale of Jointed Charlock)  
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**Spraying with Sulphate of Iron**  
**for Weed Destruction**

As a rule the exploitation of any device or invention, of either known or theoretical value, has for its one object profit to the manufacturer or the inventor. We mention this as we want you to appreciate that in the following description of the use of Sulphate of Iron for weed eradication on the farm the question of immediate, or even future direct profits, has not entered into the proposition.

The investigation and experimental work which we have undertaken, covers a period of seven years, embracing the most thorough research by one of the most able and competent agronomists in this country, who has been and is now in the employ of this Company. He studied carefully the conditions existing in foreign countries, where intensive cultivation of the soil is made necessary, owing to the limited area of farm land and the large population dependent on the comparatively small acreage of productive soil available. This developed the interesting fact that in Germany alone 30,000 to 40,000 tons of Sulphate of Iron is used yearly in the form of solution for spraying growing crops for the eradication of Wild Mustard, Wild Radish and other noxious weeds.

The fact being established, that Germany had demonstrated that Wild Mustard and Wild Radish could be controlled by spraying with Sulphate of Iron, led to the exploitation of this product for the same purpose in this country.

During the past seven years our investigations have been conducted along the lines of determining the best time to spray to secure satisfactory results, also the form of sprayer which would be most effective, and the development of a boom with suitable nozzle which could readily be attached to any spraying

device in the hands of the farmer, and which boom could be made by the farmer himself or purchased from manufacturers at a very small expense. Several years were devoted by our experts to the perfecting of this boom before its use by the farmer was recommended.

Our field experiments, covering a long period of time, were devoted to determining the weather conditions under which the most favorable results would be secured, etc. The results were really startling and justified an exhaustive campaign of education and demonstration which was conducted in New York State in 1912. The season for spraying was too short to admit of touching every portion of the State, but our campaign covered 157 towns in twenty counties.

We would mention that the necessity of producing this by-product in a form where it could be conveniently handled and readily dissolved, resulted in the creation of a process and machinery making it possible to put Sulphate of Iron on the market in what is called "sugar form," otherwise in small particles, about the size of grains of granulated sugar. Sulphate of Iron in this form is clean and easily handled and its strength is evenly distributed.

These brief comments touch only lightly on the work connected with the investigations. The sum of money expended by this Company in its work of investigation and experiment has been so large that it would take many years to offset this expense through the profits secured from the actual sale of Sulphate of Iron.

The prosperity of the farmer is the prosperity of the Nation. If our efforts to rid the farm of weeds adds to the profits of the farmer, it benefits us in the long run by enabling him to purchase more liberally of other articles which we manufacture and which are really necessary to aid in making farm work profitable.

## **1912 Campaign in New York State**

The farmer is indeed a busy man and while he is always ready to the limit of his means to adopt anything which will add to the value of his land, it is only natural that he should be satisfied beyond a reasonable doubt that the time and money expended by him will be well invested. It was our purpose to undertake all of this preliminary work, and we are confident that when you complete reading this booklet you will agree with us that the work was well worth the efforts.

The farmer whose fields are free from Mustard is justly proud. This can be accomplished at a very small expense of money and labor. A considerable part of the work done in New York State was by our own demonstrators, but in this we received the enthusiastic support of most of the farmers, and a great



amount of spraying was done by farmers on their own initiative and guided entirely by the limited instructions received from us.

Throughout the booklet we show photographs of fields that have been sprayed. The portion of the photos shown in white represents the mustard and the dark portion shows the grain cleaned of weeds. You will agree that these views speak volumes for the efficiency of Sulphate of Iron for weed destruction.

The fact that we received 100 testimonials as to the value of Sulphate of Iron in spraying speaks for itself. We print a few testimonials, and also give, by towns and counties, the names of other farmers whose testimonials we have on file. Look through the list and possibly you will find the names of some farmers whom you know. If you are desirous of seeing any of the testimonials not printed we will take pleasure in furnishing a copy of same.

Contrary to the usual custom the testimonials are printed in this portion of the booklet, so that you can more readily understand the comments and instructions in regard to spraying which follow the testimonials in question.

Our attention was called to a recent article in the "Tribune Farmer" written by Edward Van Alstyne, of Kinderhook, N. Y. We asked Mr. Van Alstyne for permission to print this article. His reply is as follows and the article in the "Tribune Farmer" is shown right after Mr. Van Alstyne's letter.

## STATE OF NEW YORK

Department of Agriculture, Albany

### BUREAU OF FARMERS' INSTITUTE

*Edward Van Alstyne, Director*

Nov. 25, 1912.

Mr. L. A. Dietrich, Sales Agent,  
American Steel & Wire Co.,  
30 Church St., New York City.

My dear Sir: Replying to yours of the 19th inst., relative to an article in the *Tribune Farmer* on troublesome weeds and the use of Sulphate of Iron, I would say I have no objection to your using the article as printed there. There is nothing in it but what I am willing to stand for and I do not know that anything need be added.

Thank you for the courtesy of asking my consent before publishing the matter.

Very truly yours,  
(Signed) EDWARD VAN ALSTYNE,  
Director.

## Two Troublesome Weeds

A Farmer's Experience with Mustard and Wild Radish.

*Edward Van Alstyne, Kinderhook, N. Y.*

Mustard and Wild Radish are spreading over the state. One may see whole fields of oats and corn yellow with them. Pri-

marily they came in with seed grain. When they have been allowed to grow and seed they have to be reckoned with for years to come. No man can afford to sow seed containing them; yet many are careless about this. Some years ago a car of Western oats were sown in my neighborhood which were full of mustard and ever since it has been spreading. Threshing machines carry it from one farm to another, so that it is difficult for any to be free from it. On the home farm I have been very careful, and, except on the lands where it is brought down by the overflow, I have been able to keep it out.

*Vitality of the Seed.* On the clay farm some twenty years ago the tenant sowed oats, uncleaned from the car referred to, and it has been with us there since. I know where the seed has lain in the ground eleven years. They are protected by an oily coating, and when turned under away from heat and air they retain their vitality, the pods protecting them. When they are brought near the surface they open and the seed grow.

*Fighting the Pest.* When a few plants appear in a field it is worth while to pull them by hand. This is impracticable when they are thick. When the seeds are allowed to mature in the grain they get in the manure from straw and chaff, and spreading increases. This is an argument for spreading such manure in the meadow, where the seeds will sprout on the surface—many of them dying; the balance are cut off with the grass before they attain much height or seed, and in this state they will not affect the hay. A coating of grass seed on the top of the manure—if put on with a spreader—will help to improve the subsequent crop and cover the ground. There will then be little further trouble from the mustard. If the manure is ploughed under or put in a ploughed field, one is sure to have an infestation the second if not the first year.

*Spraying the Plants.* When these weeds are thick, the only way is to spray the plants. This is not expensive. No man of moderate means can afford to grow mustard with his other crops. If the spraying is properly and timely done it will effectively prevent the plant seeding. The spraying must be done after the plant has begun to lift itself up, before it becomes hard and is protected by the crop with which it is growing. The spraying will not injure corn or other cereals. Some years ago I rigged up a spray outfit with seven removable nozzels, covering a strip fourteen feet wide, behind my orchard outfit. This was not altogether satisfactory, although the work was quickly and cheaply done, for it was not thorough enough. Now I use the same two-horse truck and tank and gas engine, with two leads of hose on the pump, each twenty feet long, with spreading nozzles, and a man with each. Thus I cover a strip forty feet wide. A boy drives the team. I use the same outfit for spraying potatoes. It costs somewhat more for labor, but insures a thoroughness never

attained by any apparatus continuously on the move, no matter how slow. Another advantage is that there is little driving over the growing crops. When the water is near at hand, with the above described outfit ten acres can be easily and well covered in a day. When the mustard is thick more time can be put on it, and no material need be wasted on portions of the field where there is not mustard.

*Spraying Materials.* Formerly I used blue vitriol. This works well, but it is somewhat expensive. This year I used Sulphate of Iron—a by-product of the steel manufactures. This costs less than a cent a pound, using one hundred pounds to fifty gallons of water which will cover about an acre. We put the sulphate in a fifty-gallon barrel, filled it with water, and after a few minutes' stirring it went into solution, leaving a brown liquid, very easy to put through a nozzle.

The oats were sowed late, and in spite of an extra going over the field with a cutaway there came a great growth of mustard. In June when the flowers began to show we went over the field as above. Ordinarily this would have been too late, but the late sown oats left the mustard exposed. For a few days after there were some signs of blackening in the oats, but these soon disappeared and shortly after the mustard was gone. A late growth came up and blossomed, but with no pods, and this we have turned under in fitting the land for rye. A portion of the field unsprayed for lack of material showed plenty of mustard in the oats. I have done no job for some time more satisfactory. It was a severe test, because the weather was very hot and dry when the work was done. Hence the evaporation was great. It is better done in cloudy weather. I have waited to write until the oats were harvested to be sure of the outcome. I trust any one interested will save this testimony until next spring.

(Signed) EDWARD VAN ALSTYNE.

Homer, Cortland Co., N. Y., July 8, 1912.

I am well satisfied that S. of I. does good work. It killed the mustard out of a 9-acre field that was completely overrun.

Every place the mustard was touched showed the effect of spraying. I put 900 lbs. on 7 acres, and the oats were not injured. I believe that spraying is the only practical way of eradicating mustard. I have been pulling mustard ever since I have been farming and am glad to know of an easier way of getting rid of it.

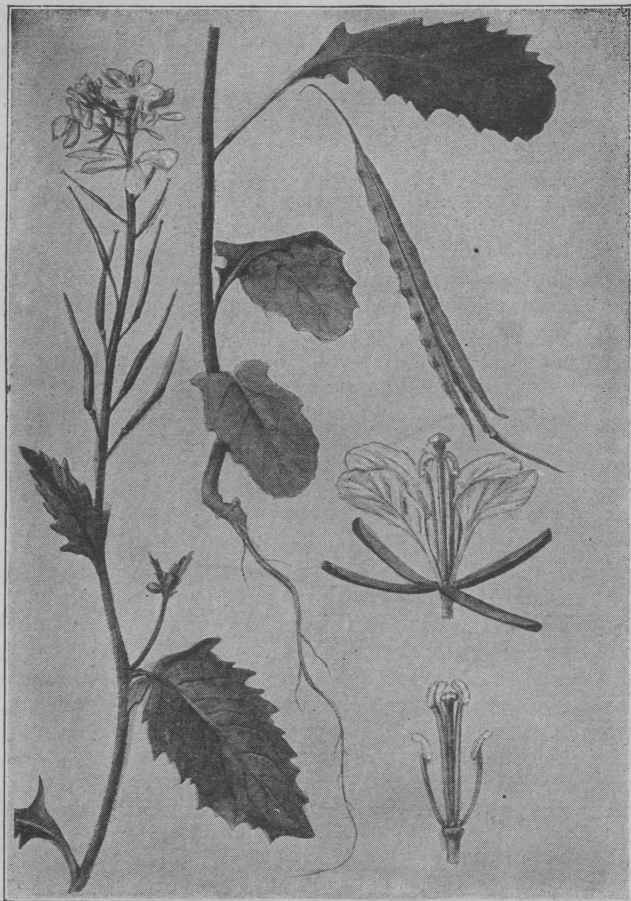
I shall spray as long as I have any mustard to fight, and think other farmers should be glad to too.

(Signed) ROLLIN E. WRIGHT.

Aurora, Cayuga Co., N. Y., July 6, 1912.

This year my field of barley was overrun with mustard, and we tried Iron Sulphate to get rid of it. It killed all the mustard, and in no way injured the grain, and we expect to use Iron Sulphate next year, for I think it is the best way of getting rid of the mustard.

(Signed) T. ROSE.



Indicating the formation of the leaves; the blossoms and the seed pods of Wild Mustard.

Pavilion, Livingston Co., N. Y., July 26, 1912.

I am satisfied that Sulphate of Iron will kill mustard in the oats.  
It did not injure the oat plants.

Signed F. W. CLEMONS.

R. F. D. No. 5, Springville, Erie Co., N. Y.

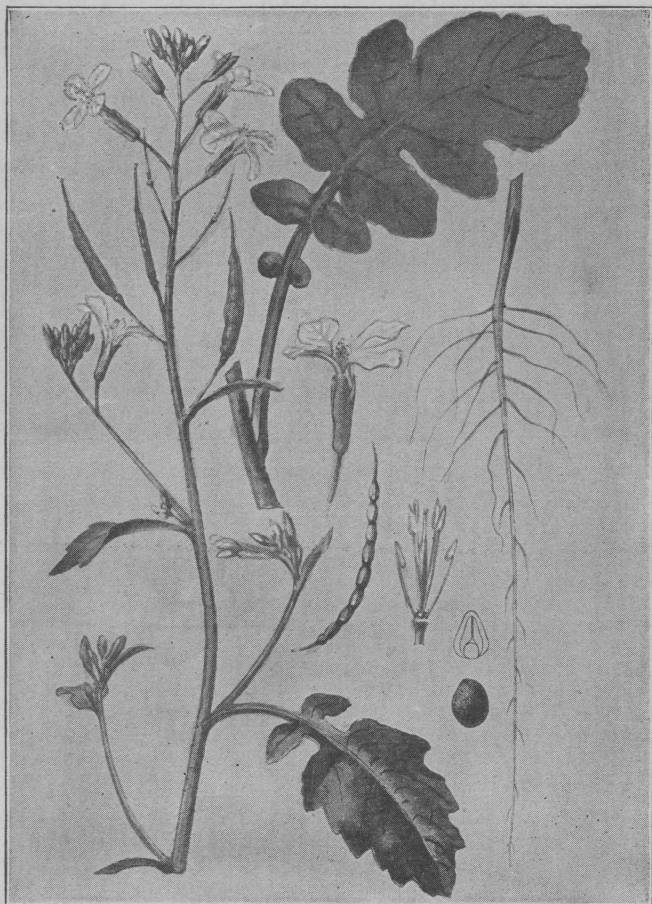
July 9th, 1912.

I sprayed two acres of an oat field that was infested with mustard this year, leaving a strip through the center that was not sprayed. After two weeks this strip was yellow while the rest of the field was dead of mustard, and the oats and seeding there in good condition.

(Signed) F. BENTZ.

LeRoy, Genesee Co., N. Y., July 16, 1912.

I used Sulphate of Iron on six acres of oats this year and had good



Indicating the formation of the leaves; the blossoms and the seed pods of Wild Radish.

results. Had not raised any oats in three years on account of mustard. Expect to put in more spring grain next year and will use Sulphate of Iron to kill the mustard.

Yours truly,

(Signed) J. W. LEWIS.

Fairport, Monroe Co., N. Y., July 10, 1912.

I used Sulphate of Iron this year to spray oats to kill mustard, and find it very satisfactory and recommend it to all who desire to get rid of mustard.

Yours truly,

(Signed) J. B. HOGAN.

Antwerp, Jefferson Co., N. Y., July 25, 1912.

For the past few years the mustard on my farm has become so thick that it has seriously hindered the growth of my crops.

This year I sprayed a small area with Sulphate of Iron, and I am





This shows a barley field sprayed with Sulphate of Iron to kill Wild Mustard on farm of C. V. Lodge, Cato, Cayuga Co., N. Y. White strip—unsprayed; dark strip in the foreground—sprayed. Note how clean sprayed portion is.



A field of oats sprayed on farm of Frank Pinney, Stafford, Genesee Co., N. Y. White strip—unsprayed; dark strip—sprayed. Note how thorough Sulphate of Iron did its work.



pleased to say that the Sulphate did the business. I am sorry that I did not have time to spray more. Next year I plan to get a machine of my own and spray all of my grain.

Mustard is a very serious pest, and it has obtained such a foothold that neither cultivation nor pulling can get rid of half the seeds.

This idea of spraying has solved a problem that has bothered me for some time, but now that I have seen the results, I will be pleased to do all that I can to get other farmers to spray.

Yours truly,

(Signed) ROBERT DICKSON,  
Pres. Feed & Supply Co.

Tully, Onondaga Co., N. Y., July 20, 1912.

I think Sulphate of Iron is A No. 1 for killing mustard out of oats. I sprayed four acres of oats and am very well pleased with the results. The oats are greener and stronger for the spraying. They have filled out very nicely and I feel that the spraying more than pays the expense. Besides killing the mustard the result is a good increase in the crop.

Yours truly,

(Signed) HERMAN WILLET.

Deansboro, Oneida Co., N. Y., July 6, 1912.

It gives me great pleasure to state, to whom it may concern, that your Sulphate of Iron will kill charlock, if applied properly before the weed is in blossom. I tried it on an acre of oats, under your direction, with a crude sprayer, and it absolutely was a success. The oats were not damaged in the least, and it surely "did the business" with the charlock. I am confident that I will get twice as many oats where we sprayed as I will on the same amount of ground in the same plot where we did not spray. This plot of land was full of the weed.

Thanking you and hoping others may profit by this as well as myself,  
I am

Very truly yours,

(Signed) CURTIS MILLER.

Lockport, Niagara Co., N. Y., July 31, 1912.

I tried your Sulphate this year for the eradication of mustard in oats, and I am satisfied it will do the work if the plants are young. I expect to use Sulphate next year and I heartily recommend its use.

Yours truly,

(Signed) FRED L. WEBER.

Canandaigua, Ontario Co., N. Y., July 25th, 1912.

With reference to the spraying experiment with Sulphate of Iron would state, I had 10 acres in one field very thick with mustard and I sprayed six. In an adjoining field of 14 acres, which was in the same condition, I sprayed a strip about 20 feet wide and left the remainder of both fields. When mustard came in full bloom the unsprayed portion of the oats could scarcely be seen and the sprayed portion had hardly a mustard plant in it, killing the plant entirely.

I am fully satisfied that the Sulphate of Iron will do what is claimed for it and I intend to spray every year.

Yours very truly,

(Signed) W. J. WILSON.

Erieville, Madison Co., N. Y., July 13, 1912.

I am perfectly satisfied with the results of spraying I did this season. I think that S. of I. is all right for killing mustard. It killed the mustard in my field and apparently did not injure the grain. It cannot help benefiting the grain when it kills the mustard.

(Signed) F. WAGNER.



Note white spot in center of picture. Entire field was as full of Wild Mustard before being sprayed with Sulphate of Iron. This was a field of oats on farm of J. Jensen, Geneva, Ontario Co., N. Y.

Albion, Orleans Co., N. Y., July 19, 1912.

I have used some of your Sulphate of Iron and am thoroughly convinced that by careful and thorough application of this Sulphate to the mustard plant I will be able to rid my farm of the pest in a very short time.

I wish you success.

Yours truly,  
(Signed) HOMER C. BROWN.

Central Square, Oswego Co., N. Y., July 9, 1912.

This year's spraying with Sulphate of Iron was beneficial to my oats, besides killing the mustard. In the field sprayed the oats are greener and taller than those not sprayed, and the mustard has disappeared. I am glad some one found a practical way of killing mustard. I will spray next year if I have any mustard.

Yours truly,  
(Signed) CHARLIE M. DANIELS.

Gouverneur, St. Lawrence Co., N. Y.  
July 15, 1912.

This year I sprayed about five acres of oats with Sulphate of Iron. At the time of spraying the mustard was in bloom. In two weeks practically all the mustard was dead.

The Sulphate of Iron did not have any injurious effect on the grain.

Next year I plan to spray all my grain that shows mustard. I am very much pleased with the results of the spraying and hope to rid my farm of the weeds in a few years.

Yours truly,  
(Signed) G. W. HEWETT.

Dryden, Tompkins Co., N. Y., July 8, 1912.

I was thoroughly satisfied with the results of Iron Sulphate spraying on my oats this year. There was no injury to the crop and I think that the sprayed grain is better than the unsprayed. I expect to use Iron Sulphate on my grain fields next year for it is the best way to get rid of mustard.

Yours truly,  
(Signed) A. D. BURLINGAME.

Sodus Center, Wayne Co., N. Y., July 24, 1912.

I heard of your Iron Sulphate this year and resolved to try it. I sprayed one acre as an experiment and I was very much pleased with it. The mustard in my field was very thick, but the weed was entirely killed and the crop uninjured. I expect to use the Sulphate next year and I would recommend it to anyone who has wild mustard.

Yours truly,  
(Signed) ANDREW J. WALHIZER.

Varysburg, Wyoming Co., N. Y.

My grain field was badly infested with wild mustard this year and to rid myself of the weed I tried your Iron Sulphate. It killed all the mustard and did not injure the grain. It is a cheap and effective way of getting rid of wild mustard and I would recommend it highly.

Yours very truly,  
(Signed) A. G. GLOSSER.

Dundee, Yates Co., N. Y., July 17, 1912.

Sulphate of Iron is all right to kill mustard. I am satisfied that it will do the work and will use it next year if I have mustard.

Yours truly,  
(Signed) ANSEL BRACE.



Above shows field of oats sprayed on farm of E. Benjamin Clyde, Wayne Co., N. Y. The white strips indicate how full of mustard this field was. Dark strip shows how thorough Sulphate of Iron did its work.

We have testimonials on file in our office from the following:

<i>Name.</i>	<i>Town.</i>	<i>County.</i>	<i>State.</i>
C. V. Lodge	Cato	Cayuga	N. Y.
Alfred Avery	Kingsferry	Cayuga	N. Y.
E. Parsons	Moravia	Cayuga	N. Y.
N. L. Stevens	Moravia	Cayuga	N. Y.
Jay S. Post	Owasco Lake	Cayuga	N. Y.
H. L. Burlew	Owasco Lake	Cayuga	N. Y.
Leslie Potter	Taylor	Cortland	N. Y.
J. Irving Colby	Cortland	Cortland	N. Y.
Simeon E. Robinson	Marathon	Cortland	N. Y.
Manson L. Smith, Cold Spring Farm	Marathon	Cortland	N. Y.
Fred L. Buchele	Akron	Erie	N. Y.
Meyers & Styn	Hamburg, R. F. D.	Erie	N. Y.
Voegelé Bros.	Lancaster	Erie	N. Y.
S. Walter	Lancaster	Erie	N. Y.
James F. Vaughan	Springville	Erie	N. Y.
Frank H. Pinney	Staffords	Genesee	N. Y.
John F. George	Chaumont	Jefferson	N. Y.
Phillip Lane	Henderson	Jefferson	N. Y.
O. K. Estes	Henderson	Jefferson	N. Y.
R. W. Harris	Sacketts Harbor	Jefferson	N. Y.
John Logan	Linwood	Livingston	N. Y.
Mrs. H. J. Patridge	Nunda	Livingston	N. Y.
W. C. Young, Supt. Borden's Earlville Farm, Borden's			
Cond. Milk Co.	Earlville	Madison	N. Y.
C. Y. Penoyer	Erieville	Madison	N. Y.
A. A. Hartshorn	Hamilton	Madison	N. Y.
H. W. Hartshorn	Hamilton	Madison	N. Y.
H. J. Furlong	New Woodstock	Madison	N. Y.
J. F. Barnard	Cuyler	Cortland	N. Y.
Robt. G. Benedict	New Woodstock	Madison	N. Y.
L. E. Benedict	New Woodstock	Madison	N. Y.
F. L. Allen	New Woodstock	Madison	N. Y.
L. D. Judd	New Woodstock	Madison	N. Y.
C. A. Clarke	New Woodstock	Madison	N. Y.
Earl Smith	New Woodstock	Madison	N. Y.
Galloway Bros.	New Woodstock	Madison	N. Y.
C. H. Hollenbeck	New Woodstock	Madison	N. Y.
Frank Wietz	North Greece	Monroe	N. Y.
Ray Rigney	North Greece	Monroe	N. Y.
Maynard Perry	Henrietta	Monroe	N. Y.
E. J. Segar	Spencerport	Monroe	N. Y.
R. E. Harmon	Clifton	Monroe	N. Y.
Emil Semuler	Webster	Monroe	N. Y.
William Mullett	Lockport	Niagara	N. Y.
P. S. Doolittle	Paris Station	Oneida	N. Y.
W. M. Daley	Vernon	Oneida	N. Y.
Wm. M. Daley	Vernon	Oneida	N. Y.
Fred E. Clark	Baldwinsville	Onondaga	N. Y.
C. T. Hatch, White Leghorn Poultry Yards Co.	Waterville	Oneida	N. Y.
Edward Commerce	Onotivia	Onondaga	N. Y.
Geo. D. Fox	Onotivia	Onondaga	N. Y.
John K. Thorne	Skaneateles	Onondaga	N. Y.
Morrell Murphy	Manlius	Onondaga	N. Y.

<i>Name.</i>	<i>Town.</i>	<i>County.</i>	<i>State.</i>
Cuyler Brown	Skaneateles	Onondaga	N. Y.
Clyde Saunders	Tully	Onondaga	N. Y.
David Etz	Tully	Onondaga	N. Y.
R. J. Gardiner	Tully	Onondaga	N. Y.
J. Porta	Tully	Onondaga	N. Y.
J. M. Tracy	Tully	Onondaga	N. Y.
Geo. W. Pierce	Canandaigua	Ontario	N. Y.
John E. Purdy, H. C. Osborn	Canandaigua	Ontario	N. Y.
E. F. Jones	Clifton Springs	Ontario	N. Y.
Stephen H. Abenshine	Clifton Springs	Ontario	N. Y.
John E. Jensen	Geneca	Ontario	N. Y.
J. A. Legerwood	Hall	Ontario	N. Y.
M. H. Nelsom	Stanley	Ontario	N. Y.
Sherman Edson	Naples	Ontario	N. Y.
S. E. Helmer	Phelps	Ontario	N. Y.
James T. Sweeney	Phelps	Ontario	N. Y.
Wm. H. Sheppard	Stanley	Ontario	N. Y.
G. D. Forbes	Kendall	Orleans	N. Y.
David Fellows	Lyndonville	Orleans	N. Y.
J. H. Rutherford	Waterport	Orleans	N. Y.
S. R. Wright	Waterport	Orleans	N. Y.
C. D. Vicker	Phoenix	Oswego	N. Y.
Ogden Wheeler	Romulus	Seneca	N. Y.
Samuel Kuney	Romulus	Seneca	N. Y.
E. L. Benjamin	Clyde	Wayne	N. Y.
W. A. Hunt	Clyde	Wayne	N. Y.
Thomas Smart	Lyons	Wayne	N. Y.
John L. Allyn	Macedon	Wayne	N. Y.
James Calwell	Ontario	Wayne	N. Y.
L. T. Birdsall	Ontario	Wayne	N. Y.
P. T. Aldrich	Palmyra	Wayne	N. Y.
J. D. Ameele	Williamson	Wayne	N. Y.
J. C. Van Hall	Williamson	Wayne	N. Y.
J. J. Bliss	Bliss	Wyoming	N. Y.
E. C. Stanley	Varysburg	Wyoming	N. Y.
E. D. Spink	Varysburg	Wyoming	N. Y.
John A. Ahl	Varysburg	Wyoming	N. Y.
J. F. Peck & Son	Warsaw	Wyoming	N. Y.
C. K. Van Allen	Warsaw	Wyoming	N. Y.
W. S. Bender, Chas. E. Bender	Warsaw	Wyoming	N. Y.
Markham & Puffer	Avon	Livingston	N. Y.
F. S. Webster	Town Line	Erie	N. Y.

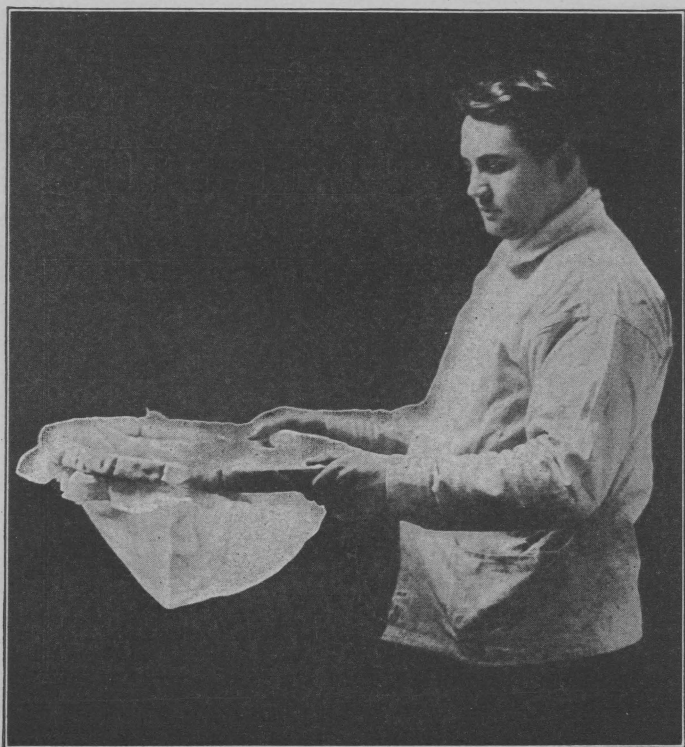


## Mixing the Spraying Solution

Use an old vinegar, kerosene or whiskey barrel holding about 52 gallons. Thoroughly scrub and clean the barrel before mixing.

Fill the barrel three-quarters full with water, and dump in this a 100-pound bag Sulphate of Iron.

Excellent Type of Home Made Cheesecloth Strainer.



Straining Solution Through Cheesecloth.

With a common garden hoe dissolve the Sulphate of Iron by forcing the hoe to the bottom of the barrel and against the staves on the other side of the barrel, and pull the hoe toward you. This up and down movement violently agitates the solution, and the Sulphate of Iron dissolves in five or seven minutes. Then fill the barrel to the top with water.

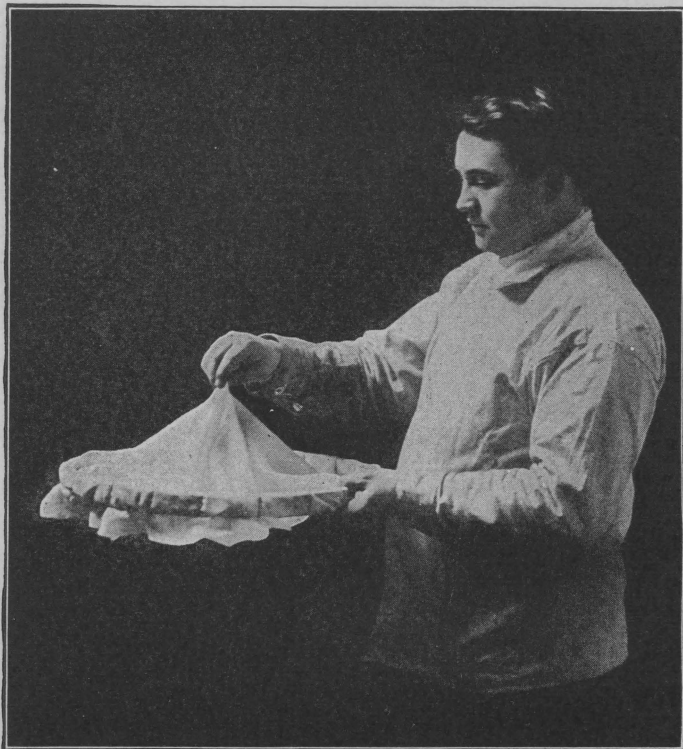
When ready to place the solution in the spraying machine,

be sure to strain it through two thicknesses of cheesecloth when pouring it into the tank of the machine.

If the thick brown scum which forms on the top of the mixture is removed before straining, it will make the work easier.

This mixture will give a 20 per cent. solution, which is the proper strength for spraying, and the 52 gallons is enough to spray one acre.

Excellent Type of Home Made Cheesecloth Strainer,



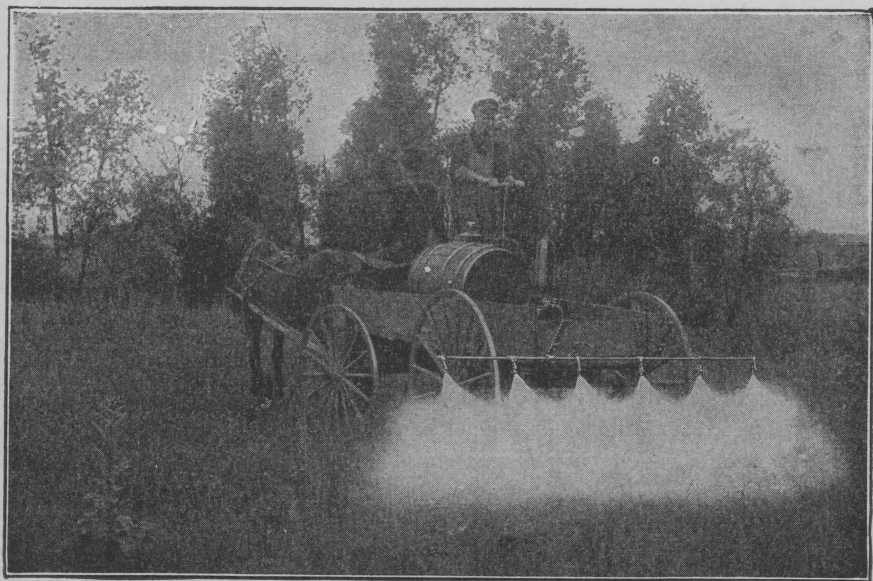
Moving Cheesecloth Up and Down.

**Note:** Other methods can be adopted for mixing the solution, but the same general plan should be followed as outlined.

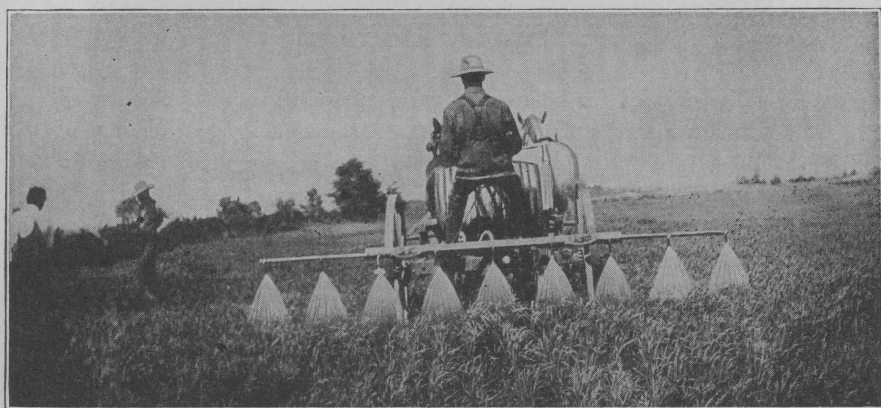
Spraying for Wild Mustard, Wild Radish, etc., is a simple operation, and it is our purpose to describe it in as few words as possible:

### Time to Spray

The time when the buds first show to the time that the buds



**How the Spray SHOULD LOOK**



**How the Spray Should NOT Look**

begin to blossom is the ideal time to spray, and covers a period of about ten days.

**Note:** Spraying can be done as early as when the mustard, etc., is three or four inches high, or when the plant has three or four leaves, but there is the likelihood that certain seeds will sprout after the spraying has been done and new plants will go to seed. By spraying at the time recommended you will not alone kill the older plants, but also the later and younger growth.

## **Spraying Machines**

Practically any type of spraying machine can be used, either power, traction or even a good hand pump, placed in an ordinary farmer's wagon, providing a suitable boom is used in connection with same. While a hand pump will answer the purpose it is strongly recommended that traction sprayers be used wherever possible.

**Note:** It is desirable that double action pumps be used in all machines resulting in a more uniform and uninterrupted spray. See that the machine is clean so that nozzles will not clog. No matter what type of machine is used, always try to keep a uniform pressure, as near 85 pounds as possible, otherwise the nozzles will not throw the spray fine enough to cover the field evenly.

## **Spray Booms**

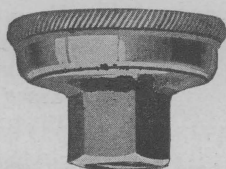
The nozzles for booms for grain spraying should not be over 18 inches apart, and not less than seven nozzles to each boom. With suitable nozzles this will result in the spread of the spray from one nozzle meeting the spread from the other nozzles, and covering the weeds without any break, and cover a space not less than ten feet in width.

Always be sure to have the boom high enough to cover all of the plants with the spray.

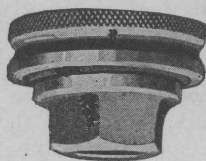
If possible use booms made entirely of brass, as they will not rust. Galvanized booms will give good service if thoroughly washed with clean water when through spraying.

## Spray Nozzles for Booms

There are two types of nozzles made in New York State, which are adapted for spraying Sulphate of Iron.



"Tiger" Nozzle  
Made by Field Force Pump Co., Elmira, N. Y.

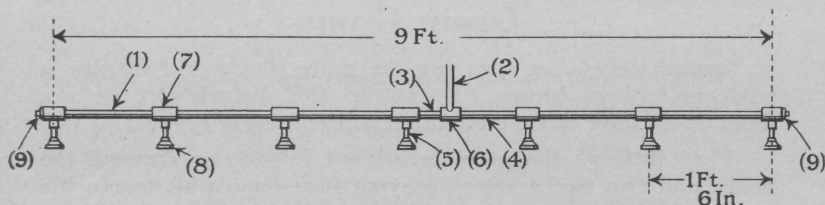


"Mistry, Jr." Nozzle  
Made by Goulds Mfg. Co., Seneca Falls, N. Y.

These nozzles can be purchased at practically any hardware store handling spraying material.

## Home Made Spray Booms

You can readily make this boom or have it made in a local shop. This boom can be used with any machine, whether power, traction or hand pump. The specifications are as follows:





## Bill of Material

Pieces.	Size.	Kind.
(1) Five	$\frac{3}{4}$ " x $16\frac{1}{2}$ "	Galvanized Nipples.
(2) One	$\frac{3}{4}$ " x 4"	Galvanized Nipple.
(3) One	$\frac{3}{4}$ "	Close Galvanized Nipple.
(4) One	$\frac{3}{4}$ " x $14\frac{1}{2}$ "	Galvanized Nipple.
(5) Seven	$\frac{1}{4}$ " x $2\frac{1}{2}$ "	Brass Nipples.
(6) One	$\frac{3}{4}$ " x $\frac{3}{4}$ "	Galvanized Tee.
(7) Seven	$\frac{3}{4}$ " x $\frac{1}{4}$ "	Galvanized Tee.
(8) Seven		Tiger Nozzles.
(9) Two	$\frac{3}{4}$ "	Plugs.

## Converting Potato Sprayer Booms

The spacing of the nozzles on potato sprayer booms is not suitable for spraying weeds.

The boom on potato sprayers can be converted for spraying weeds by cutting the pipe into 18-inch lengths and joining with tees to which extra nozzles can be attached. This boom can also be used for spraying potatoes by plugging up the extra nozzles.

**Note:** When remodeled boom has been used for spraying Paris Green or Bordeaux, be sure to thoroughly clean the pipes and connections before spraying Sulphate of Iron.

## Weather Conditions for Spraying

Spray at any time when rain is not expected for at least 18 to 24 hours after spraying.

Cloudy weather, when rain is not looked for in 18 to 24 hours, will produce really better results than a warm, bright day.

Do not spray until the dew is entirely off the plants.

**Note:** If it rains within 18 hours of spraying the solution will be washed off the plant before it has done its work, necessitating a second spraying.

## Effect of Sulphate of Iron on Growing Grain Crops

Immediately after spraying the grain plants will display a tendency to burn brown. Do not let this disturb you, as in a week or ten days this discoloration will entirely disappear.

Very little of the grain is injured by driving through the fields, and two weeks after spraying it is impossible to see the marks of the wheels of the machine, or the horses' hoofs.



## **Spraying Wild Radish**

Wild radish is more resistant to the action of Sulphate of Iron than wild mustard and the spraying must be carefully done in order to insure a complete kill. The solution should be carefully prepared, at least 100 pounds of sulphate of iron should be applied to the acre, the spraying machine should maintain a sufficiently high pressure to throw a misty spray (85 pounds), the weather conditions should be watched carefully, and every precaution taken to insure perfect application of the sulphate of iron solution.

## **Spraying Corn**

Farmers in New York State who this year sprayed corn fields to destroy mustard, etc., report very satisfactory result. So do not hesitate to spray corn where mustard exists.

Sulphate of Iron will reach the mustard plants growing close to the corn stalks, which would not be reached by the knives of the cultivators.

The leaves of the corn, particularly the point of the leaves, will be darkened by the solution, but the plant quickly recovers.

## **Bureau of Information**

Questions may present themselves to your mind which have not been covered by our description of the use of Sulphate of Iron for weed eradication. We have a well equipped department to handle inquiries, and we will cheerfully, and to the best of our ability, answer any question which you submit.

## **Final**

"Procrastination is the Thief of Time." Never truer words said. Had we delayed in, or neglected our spraying campaign, or the preparation of this booklet, the detailed facts contained could not have been published so promptly.

If weeds of the mustard family exist on your farm, or that of your neighbors', you no doubt are interested in spraying. Unity of action is always productive of best results. If your neighbor's farm is burdened with mustard, ask him if he has seen this booklet, and if not, have him write us for a copy, or send us his name.

Confer with the farmers in your section and prepare in advance for your spraying campaign. If no suitable spraying device is available no doubt arrangements can be made by you for the purchase of a traction machine on shares. We will provide so that the necessary Sulphate of Iron is on hand in your section so that it will be available when needed.

**American Steel & Wire Company,  
30 Church Street, New York.**

# Report of the

It is the duty of the Government to provide for the health and safety of its citizens. This report is a summary of the work of the Department of Health and Human Services during the past year. It is intended to provide information to the public and to the Congress.

## Department of Health and Human Services

The Department of Health and Human Services is responsible for the health and safety of the Nation. It is the largest and most complex of the Federal departments. It is the only one that is directly involved in the health and safety of the Nation. It is the only one that is directly involved in the health and safety of the Nation.

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